A: Datasheet

Algorithm: clearviewai_000

Developer: Clearview AI Inc

Submission Date: 2021_11_12

Template size: 4096 bytes

Template time (2.5 percentile): 764 msec

Template time (median): 765 msec

Template time (97.5 percentile): 770 msec

Investigation:

Frontal mugshot ranking 8 (out of 316) –– FNIR(1600000, 0, 1) = 0.0011 vs. lowest 0.0009 from sensetime_006

Mugshot webcam ranking 8 (out of 278) –– FNIR(1600000, 0, 1) = 0.0071 vs. lowest 0.0057 from sensetime_006

Mugshot profile ranking 5 (out of 247) –– FNIR(1600000, 0, 1) = 0.0622 vs. lowest 0.0550 from sensetime_006

Immigration visa–border ranking 5 (out of 205) –– FNIR(1600000, 0, 1) = 0.0014 vs. lowest 0.0009 from sensetime_006

Immigration visa–kiosk ranking 2 (out of 202) –– FNIR(1600000, 0, 1) = 0.0561 vs. lowest 0.0487 from cubox_000

Identification:

Frontal mugshot ranking 24 (out of 316) –– FNIR(1600000, T, L+1) = 0.0058, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

Mugshot webcam ranking 20 (out of 276) –– FNIR(1600000, T, L+1) = 0.0253, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

Mugshot profile ranking 68 (out of 246) –– FNIR(1600000, T, L+1) = 0.9743, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk_hr_000

Immigration visa–border ranking 14 (out of 204) –– FNIR(1600000, T, L+1) = 0.0076, FPIR=0.001000 vs. lowest 0.0039 from sensetime_006

Immigration visa–kiosk ranking 61 (out of 199) –– FNIR(1600000, T, L+1) = 0.2691, FPIR=0.001000 vs. lowest 0.0729 from cubox_000
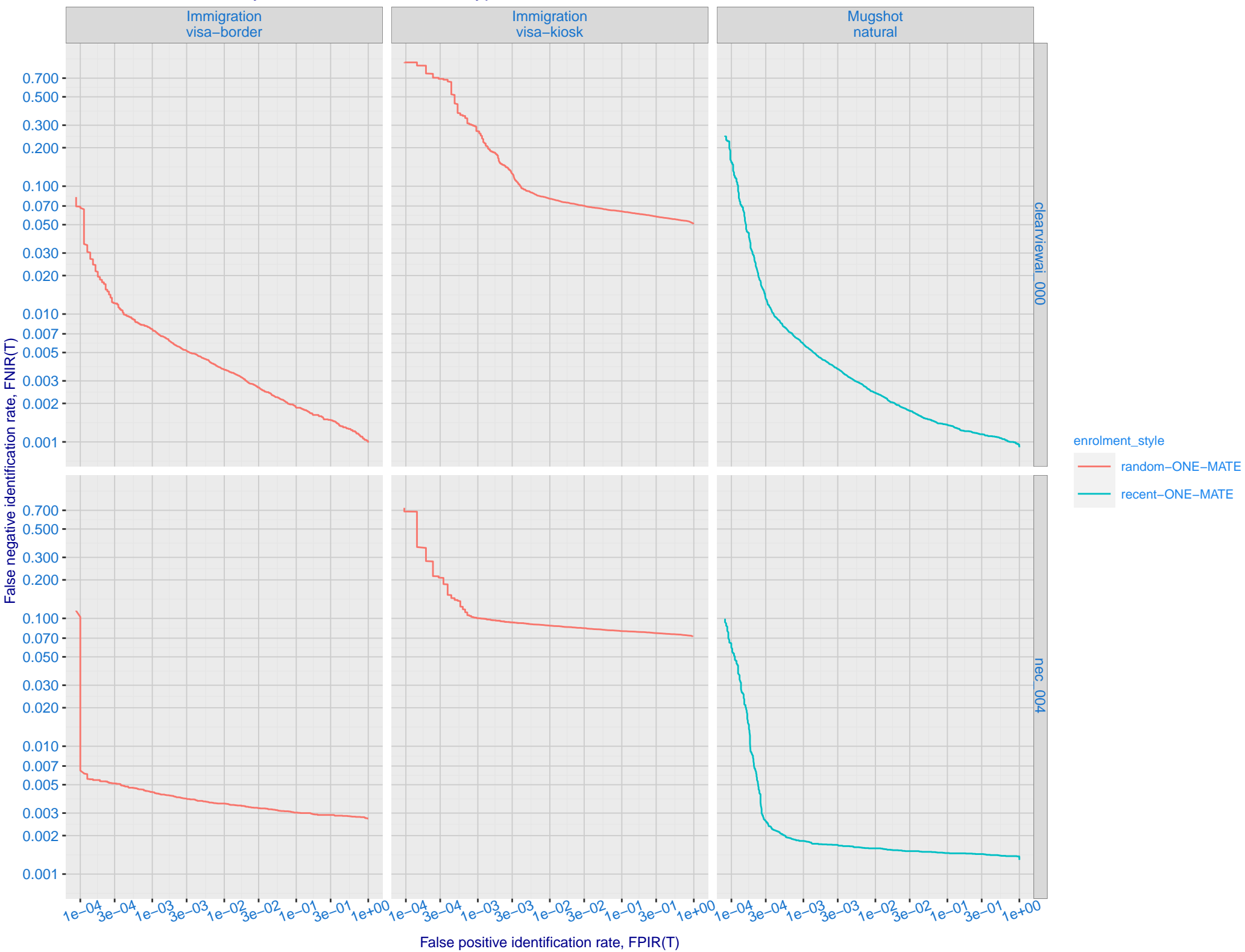
B: Mugshot natural images, identification mode: FNIR(N, L+1, T) vs. most accurate (nec_004)
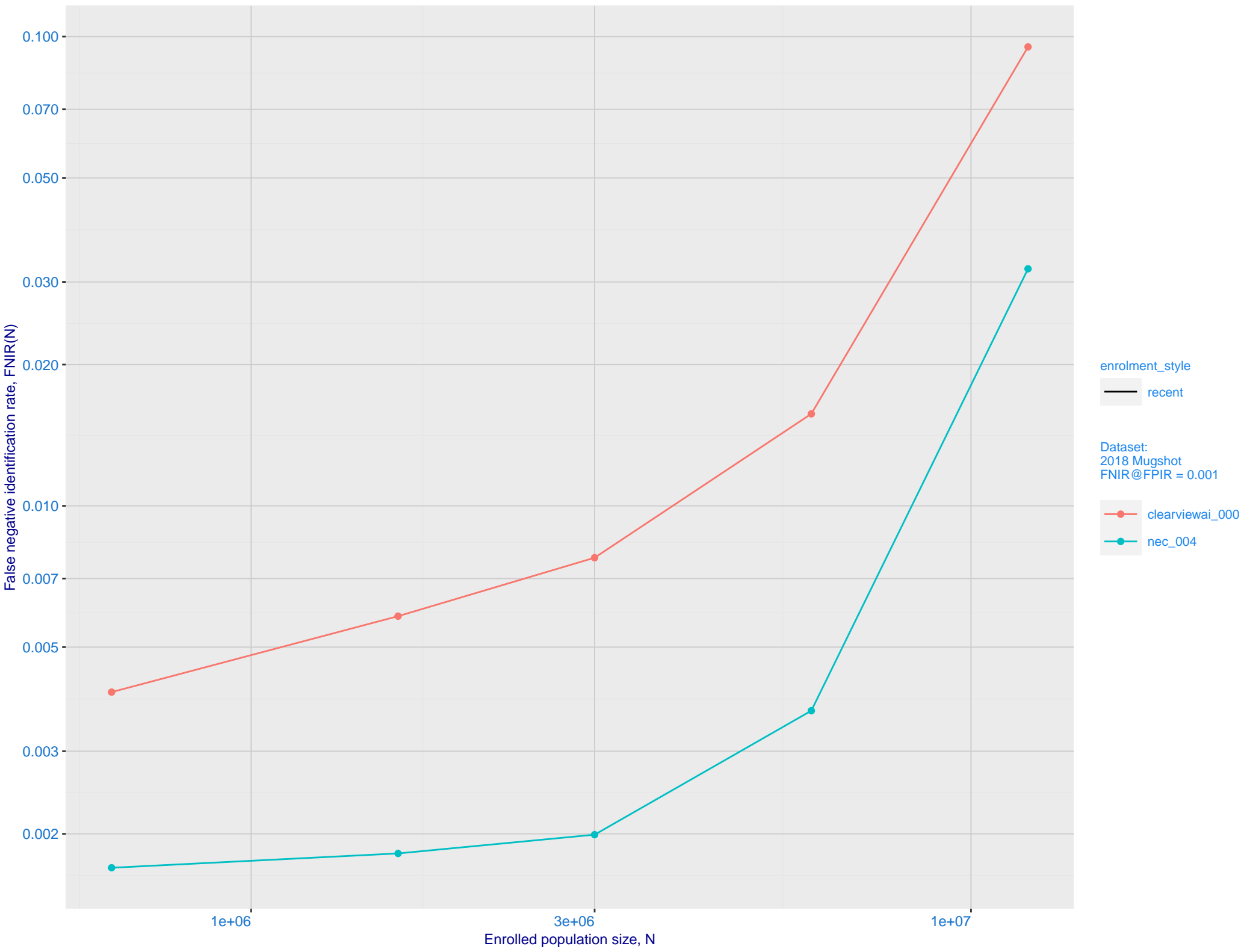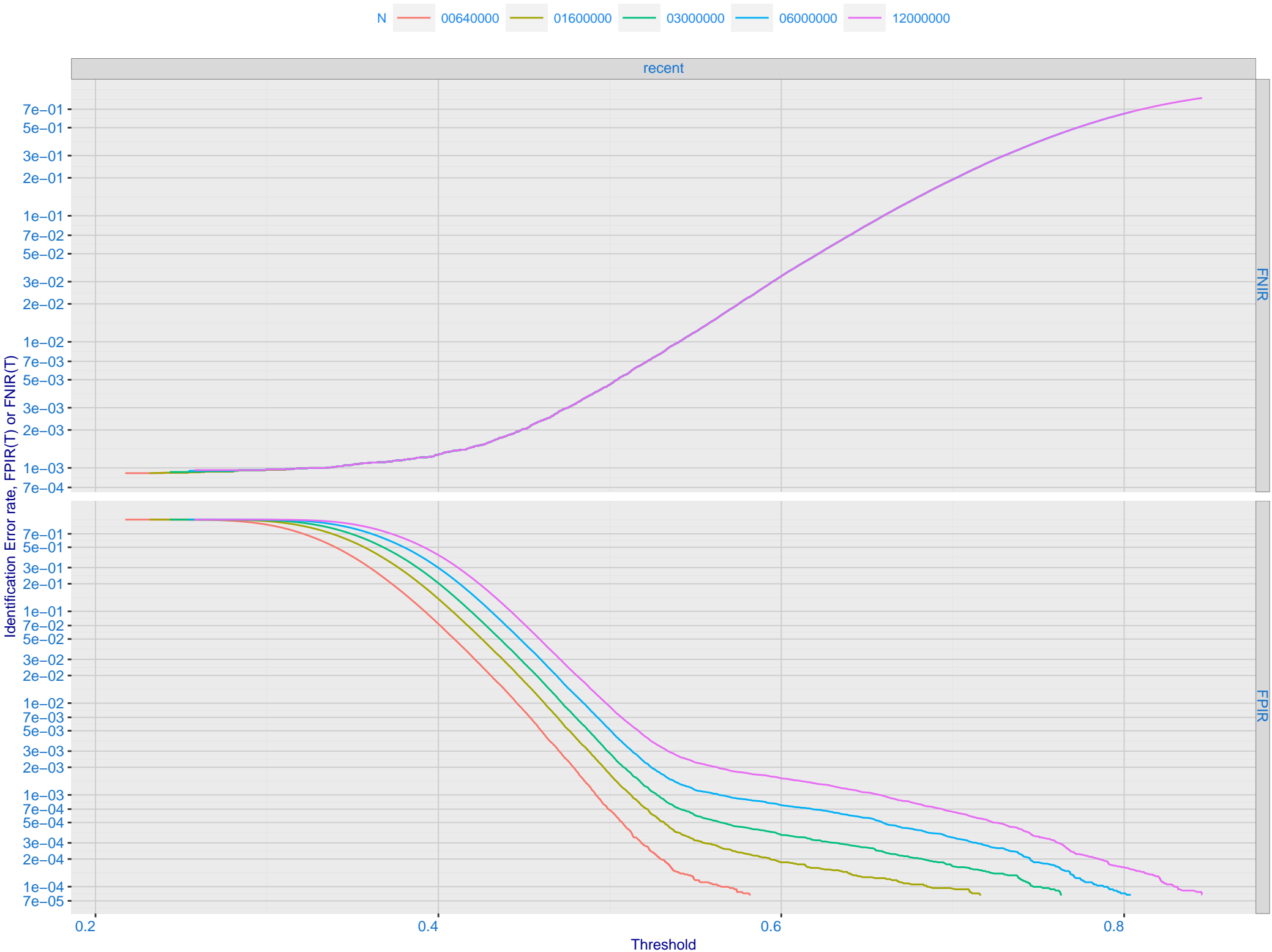
C: Evolution of accuracy for CLEARVIEWAI algorithms on three datasets 2018 – present
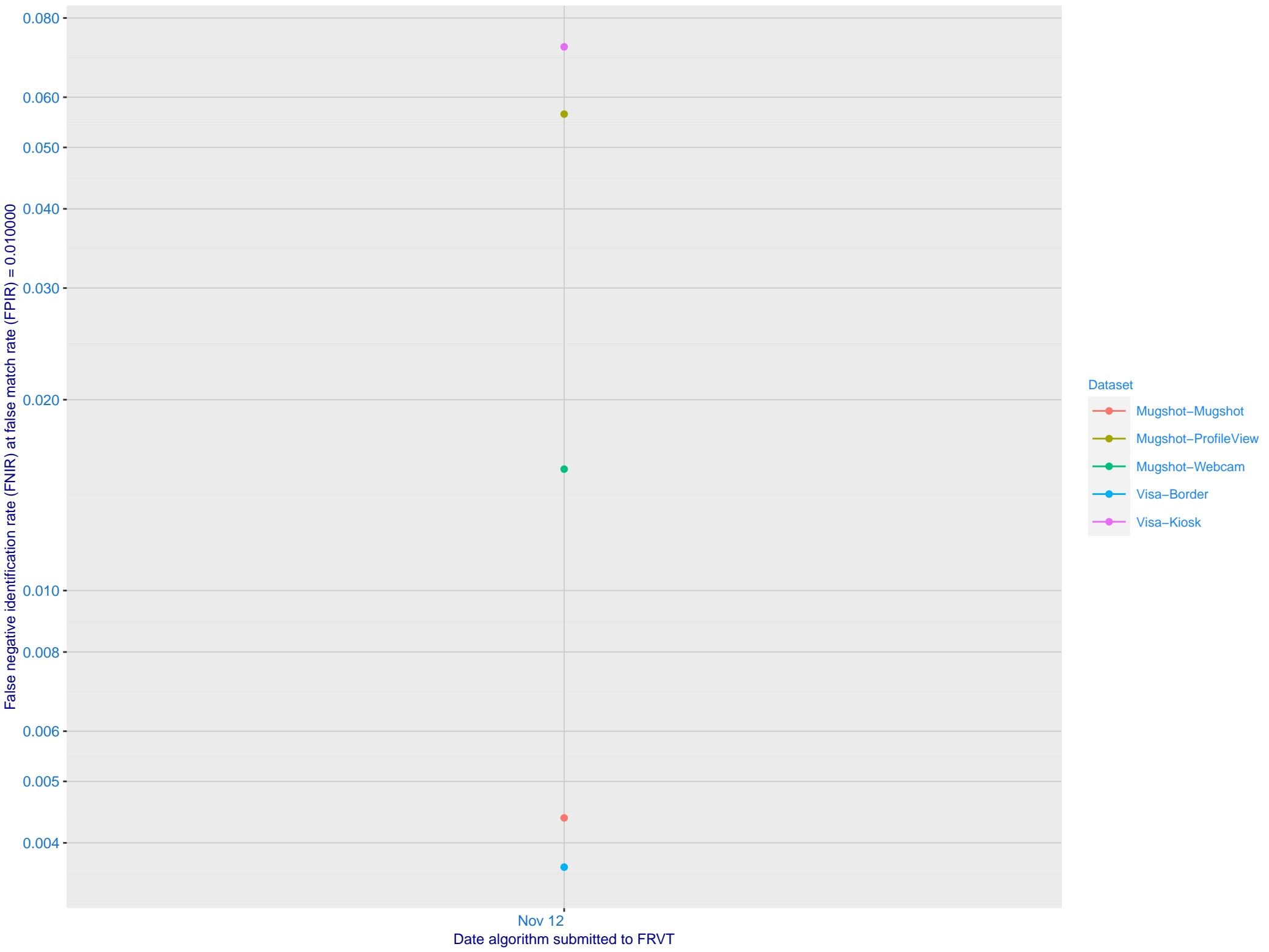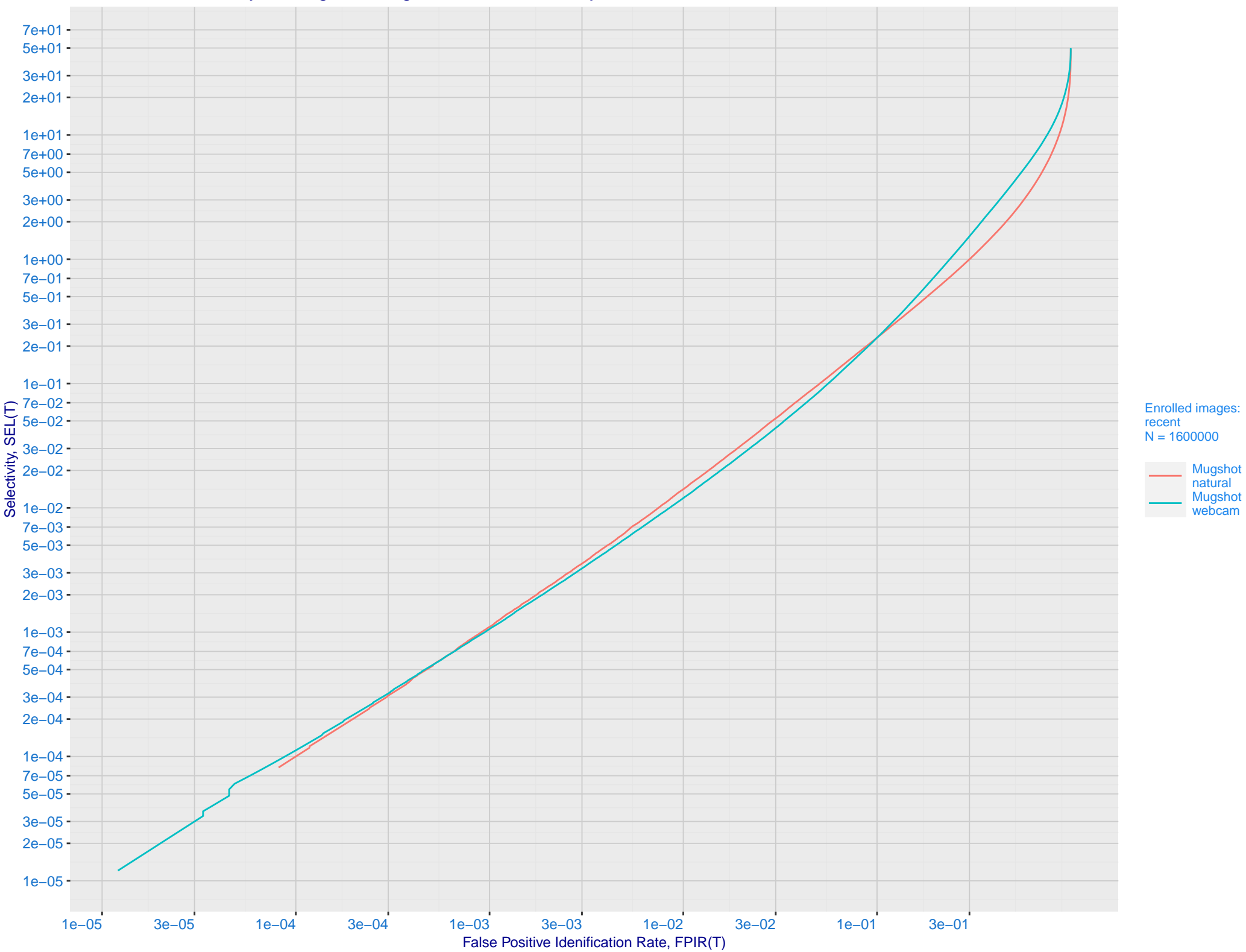
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals
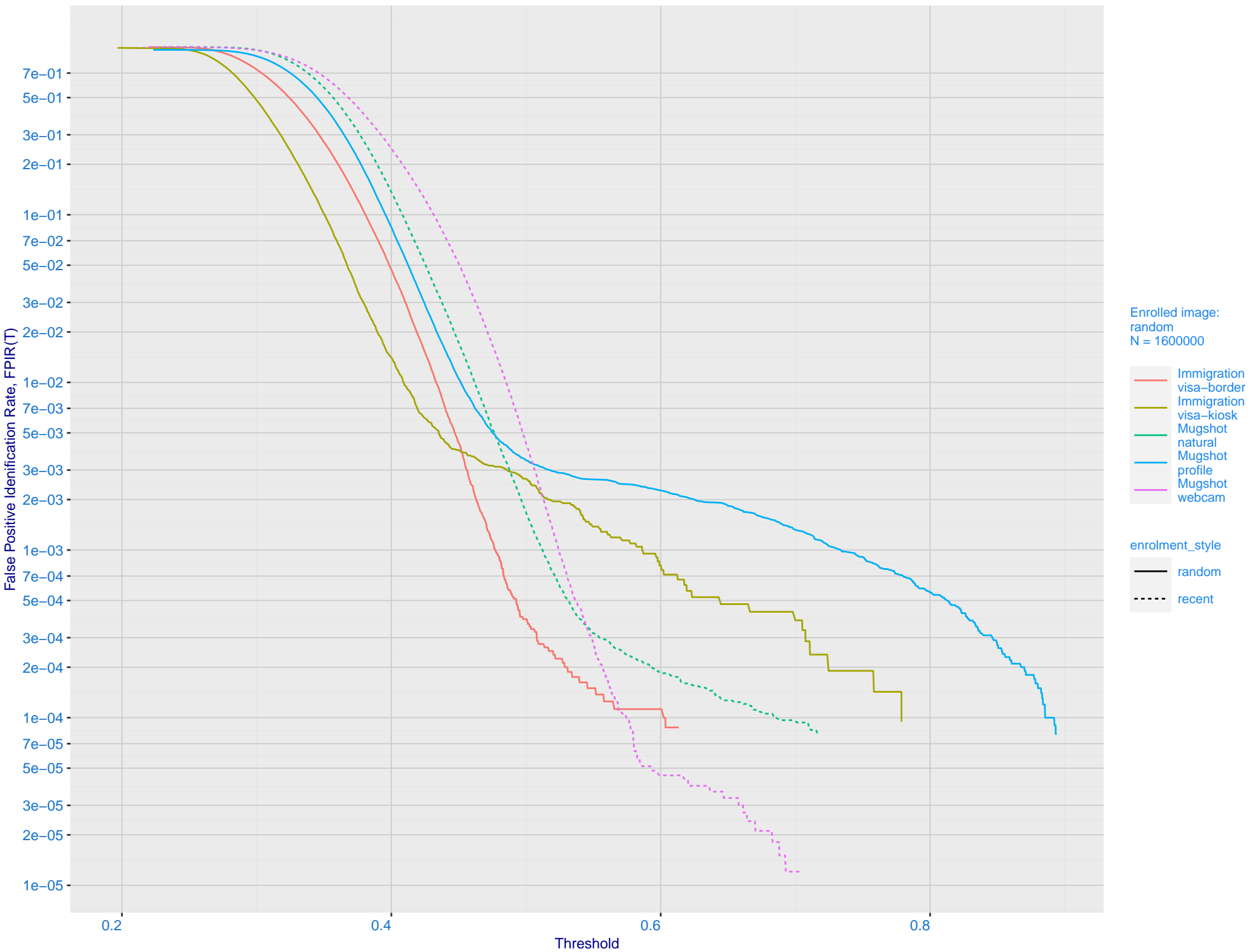
E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images

F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate
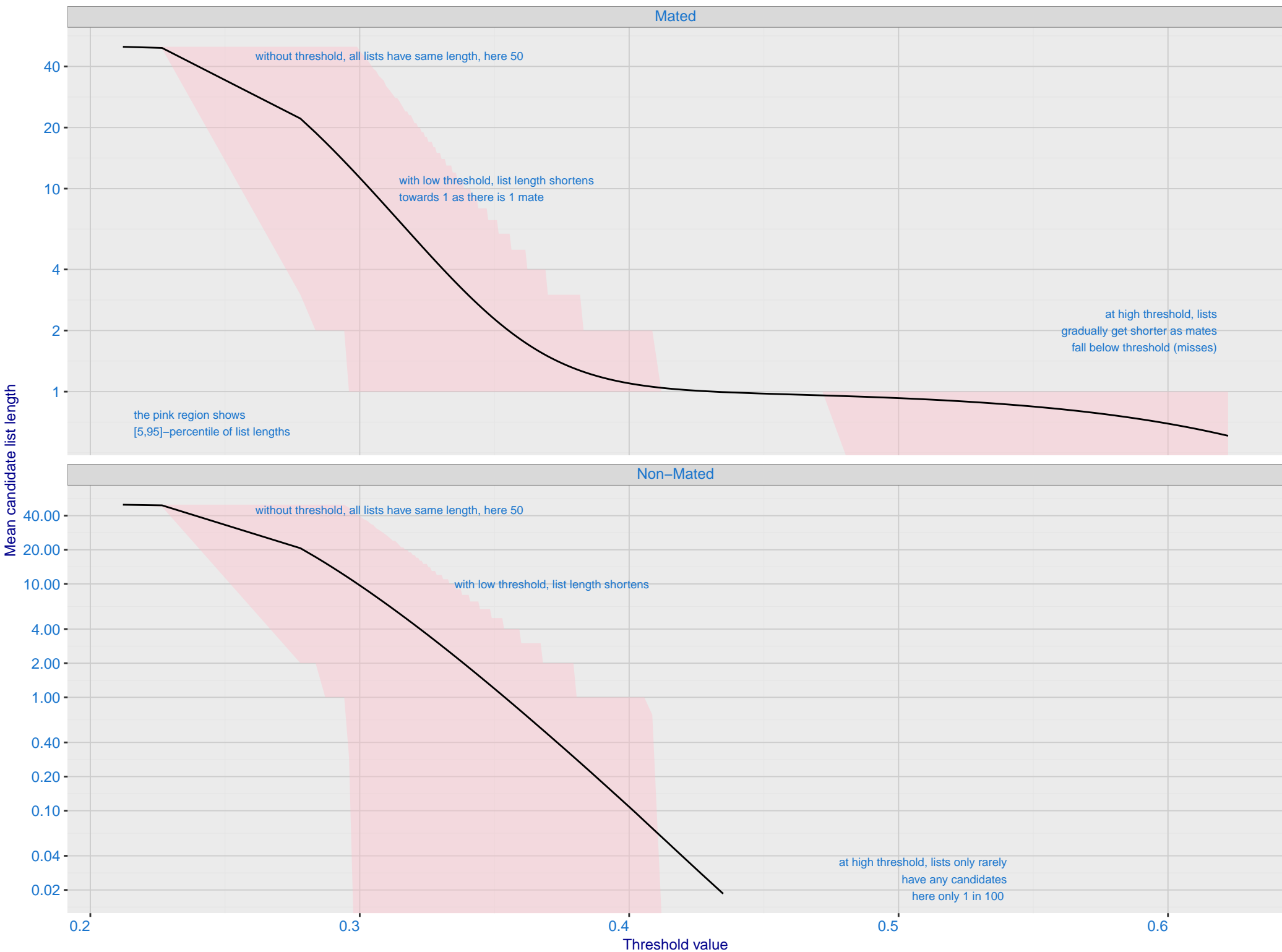
G: FPIR dependence on T by probe type for N = 1600000 subjects

H: Reduced length candidate lists for human review
Dataset is border–border with time–lapse [10,15] YRS with N = 1600000. Probes are 10–15 years later than enrollment image

Mated

without threshold, all lists have same length, here 50

with low threshold, list length shortens
towards 1 as there is 1 mate

at high threshold, lists
gradually get shorter as mates
fall below threshold (misses)

the pink region shows
[5,95]–percentile of list lengths

Non–Mated

without threshold, all lists have same length, here 50

with low threshold, list length shortens

at high threshold, lists only rarely
have any candidates
here only 1 in 100

Mean candidate list length

Threshold value
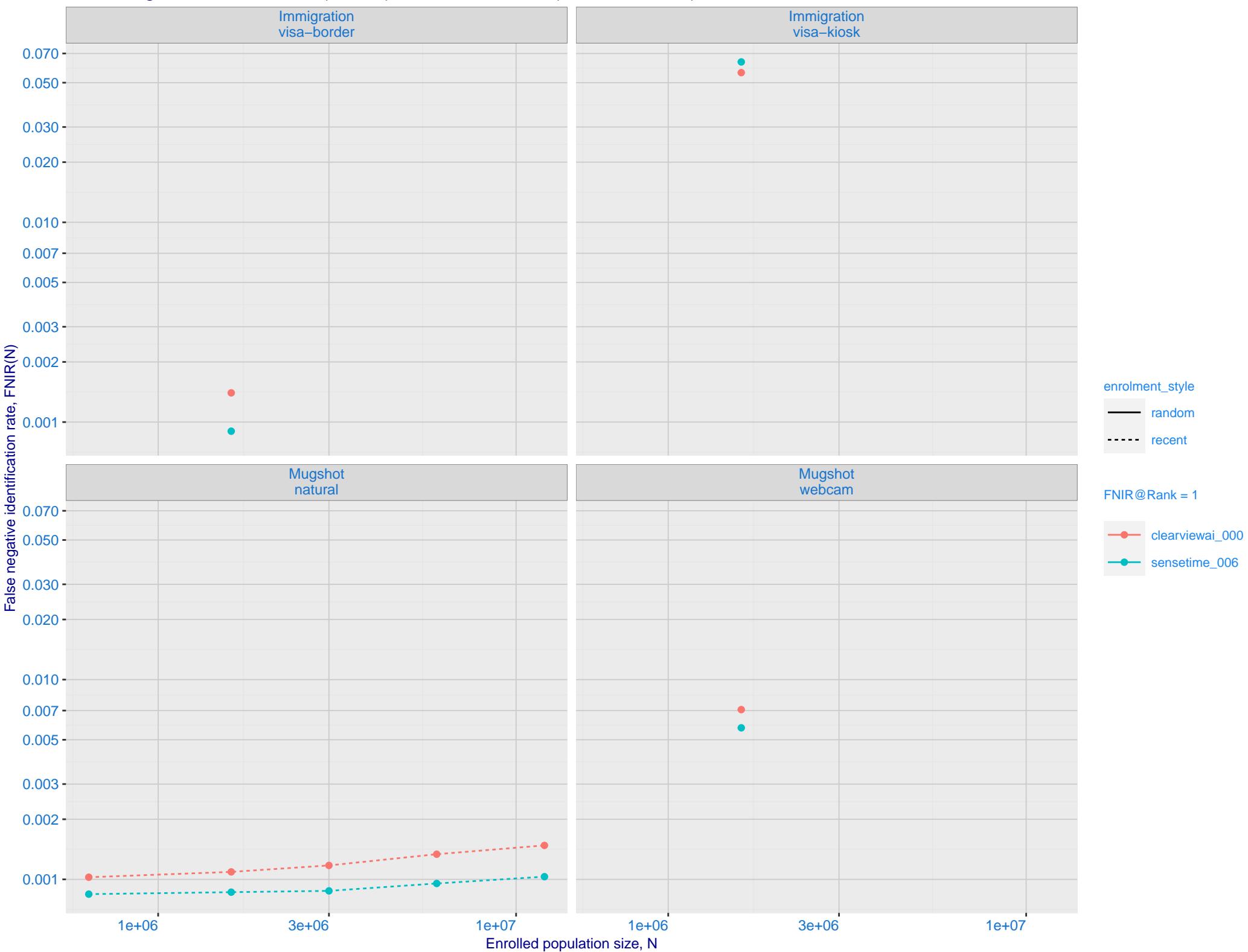
I: FNIR and FPIR dependence on threshold
Dataset is border–border with time–lapse [10,15] YRS with N = 1600000. Probes are 10–15 years later than enrollment image
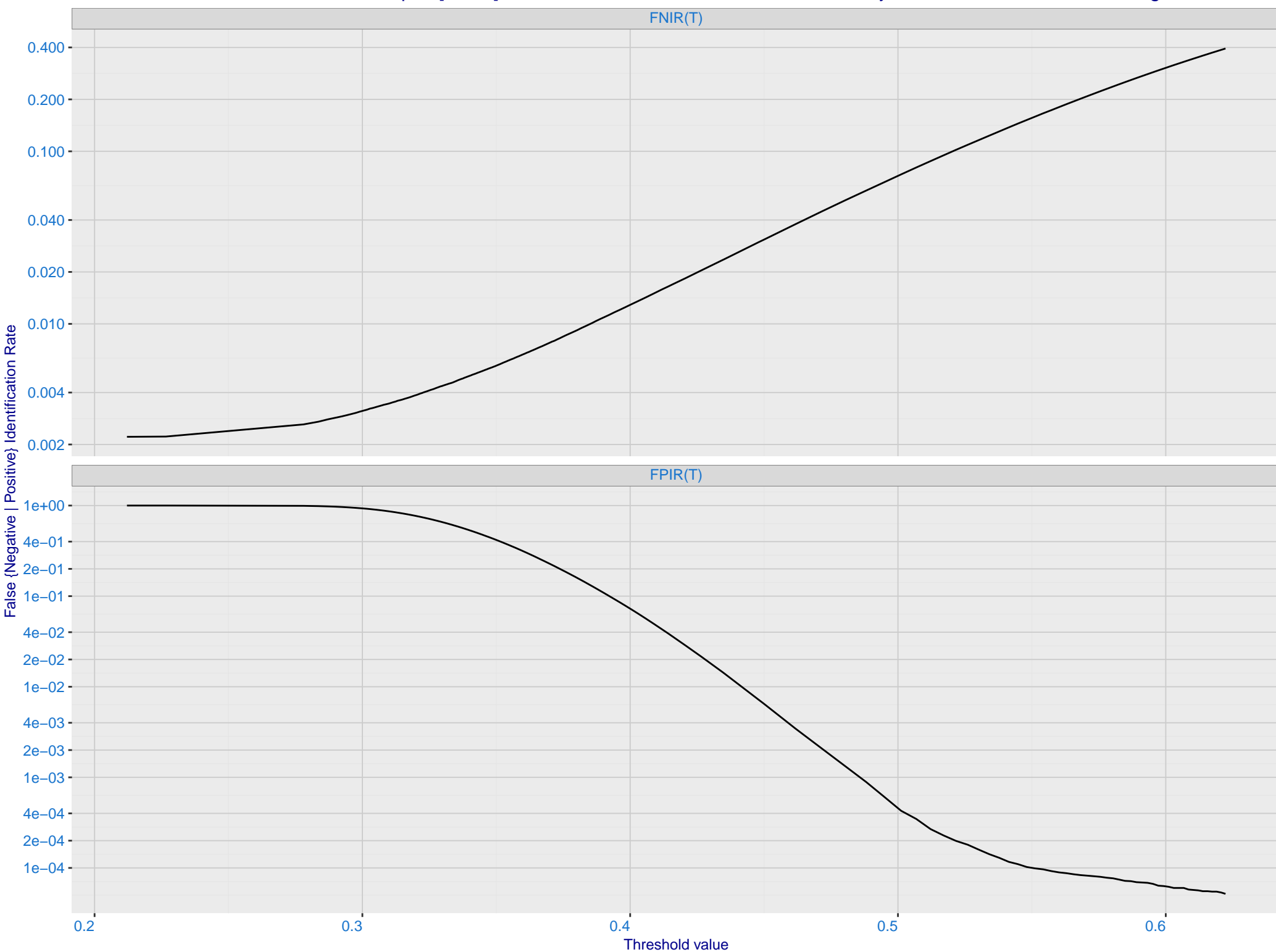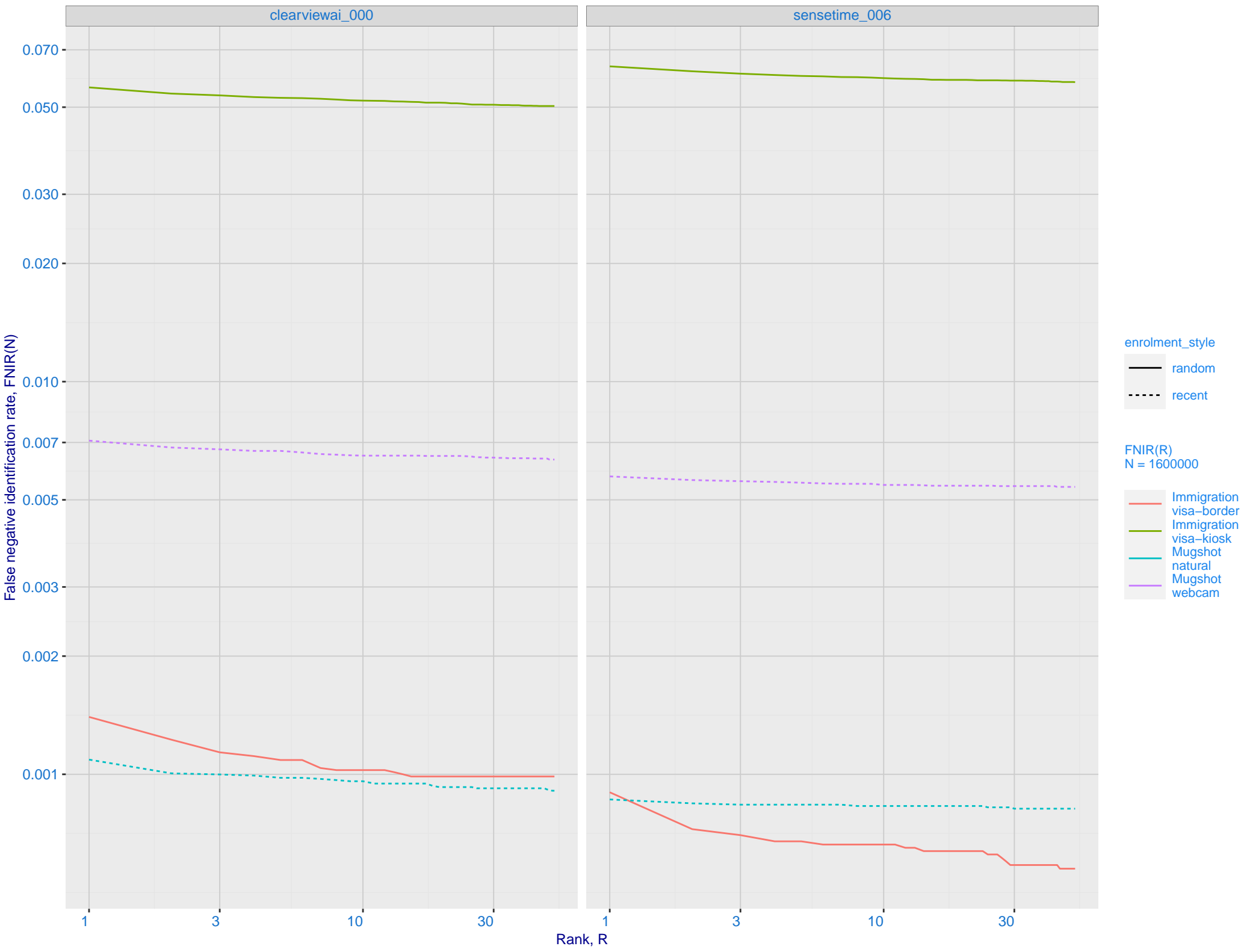
J: DET for Mugshot natural images and various N. Links connect points of equal threshold.
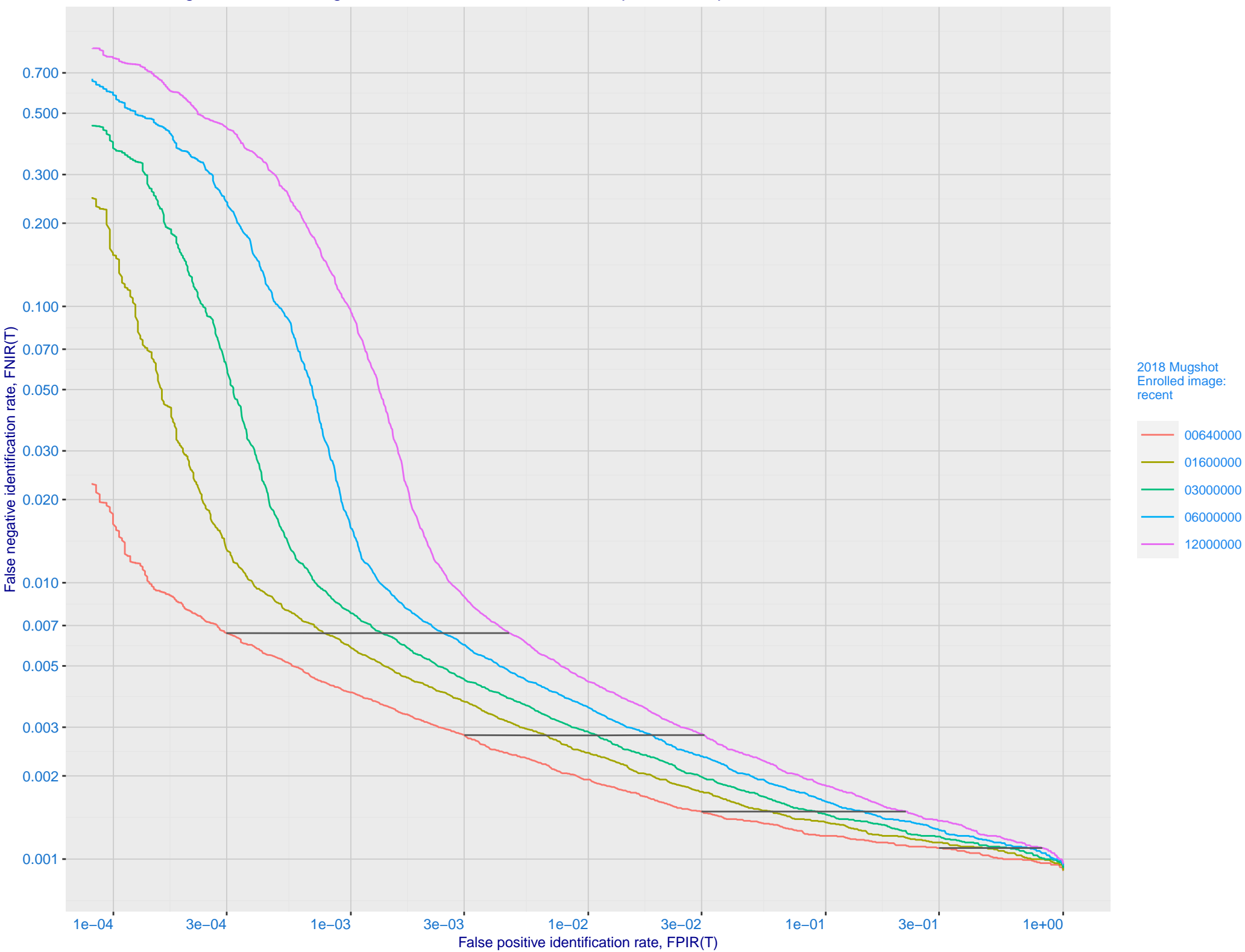
K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_006)

L: Investigational mode: FNIR(1600000, R, 0) by probe type

M: Template duration; search duration vs. N. The blue and pink ribbon covers 95 percent of observed measurements. The template generation time is independent of N. The log and power–law models are fit to the first two (N,T) observations
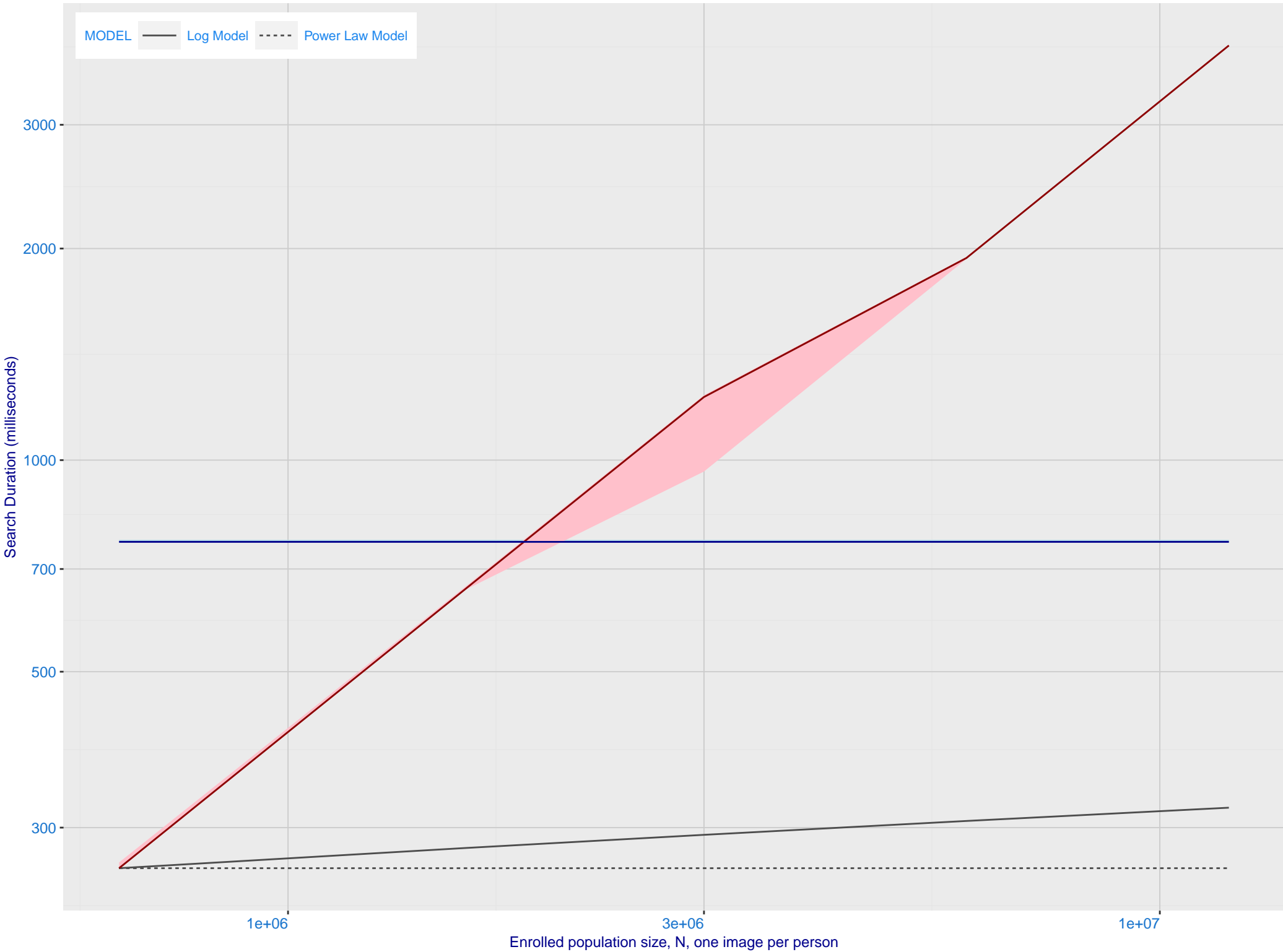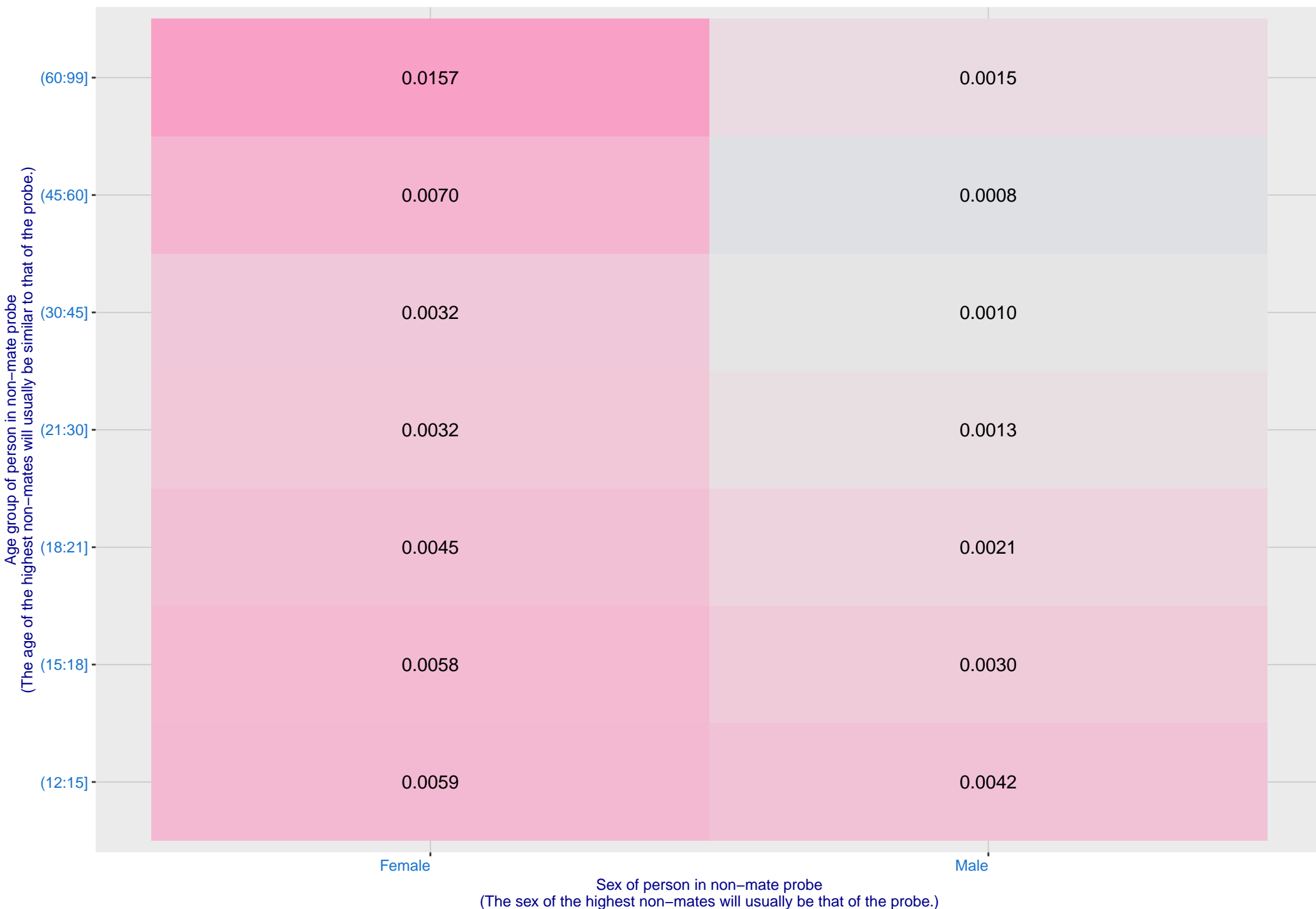
O: FNIR(T, N = 1.6 million) by sex, age and time-lapse. The top row gives investigational rank-1 miss rates. The bottom panels give high threshold for more lights-out identification with low FPIR.
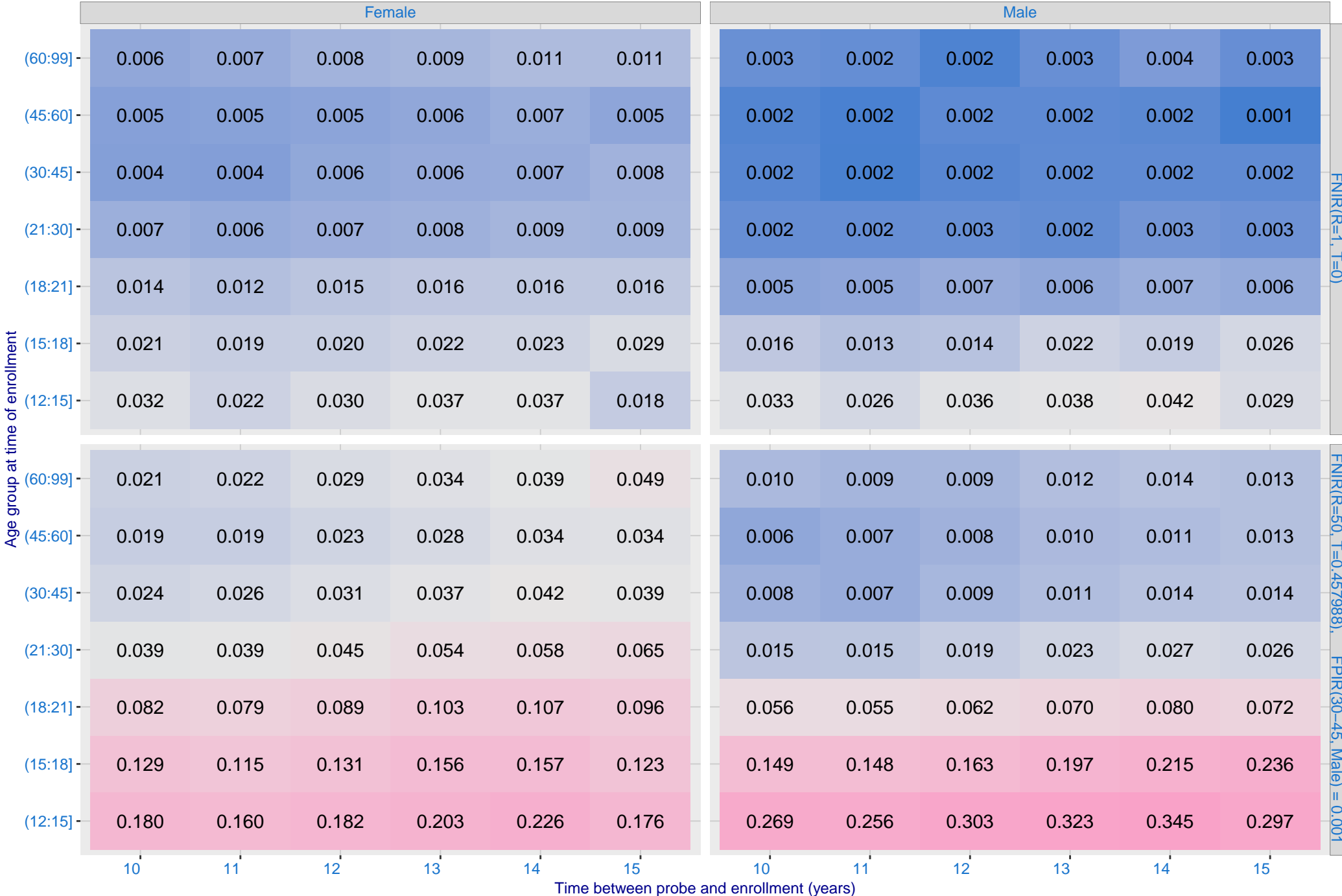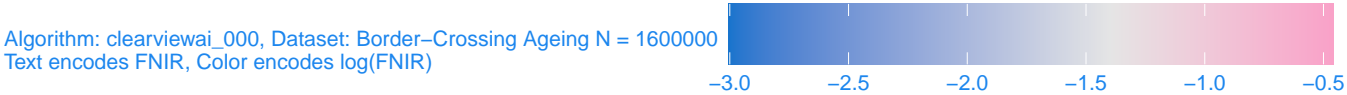
P: FPIR(N = 1.6 million) by sex and age. It is typical for false positive identification rates to be higher in women except in their teens.

Algorithm: clearviewai_000, Dataset: Border−Crossing Ageing
Threshold: 0.457988 set to achve FPIR(30−45, Male) = 0.001

Color encodes log(FPIR)

Age group of person in non-mate probe (The age of the highest non−mates will usually be similar to that of the probe.)	Female	Male
(60:99]	0.0157	0.0015
(45:60]	0.0070	0.0008
(30:45]	0.0032	0.0010
(21:30]	0.0032	0.0013
(18:21]	0.0045	0.0021
(15:18]	0.0058	0.0030
(12:15]	0.0059	0.0042

Sex of person in non−mate probe
(The sex of the highest non−mates will usually be that of the probe.)

Q: Identification FNIR(N, T, L+1) and Investigational FNIR(N, 0, R) under ageing